

ABSTRACT OF THE DISCLOSURE:

Complex insulating perovskite alloys are of considerable technological interest because of their large dielectric and piezoelectric responses. A certain class of atomic rearrangement should lead simultaneously to large electromechanical responses and to unusual structural phases in a given class of perovskite alloys. In particular, new ferroelectric alloy materials having enhanced electromechanical properties may be obtained by rearranging the ordering of atoms in stacked planes where the alloy is atomically ordered along a direction that is not the direction of polarization of the disordered alloy; the stacking is short; and the atoms belong to different columns of the periodic table. The enhanced electromechanical properties may be obtained at any specific temperature less than the Curie temperature of the disordered alloy.